Abstract

A computerized method of virtual flowbench simulation of fluid flow interaction with an object described in at least one design file includes receiving user-defined input via a user interface, the user-defined input including a specification of the at least one design file, accessing the at least one design file, and accessing a generic template describing basic geometries of the object, and modifying the basic geometries of the object with the at least one design file. Automatically, surface and volume mesh are generated in the object, and fluid flow interaction with the object is simulated. Predetermined data parameters are measured and stored during simulation. The method automatically checks the predetermined data parameter measurements to determine whether steady state has been reached and whether a predetermined maximum number of time steps has been reached. The method then automatically terminates the simulation in response to the steady state being reached or the predetermined maximum number of time steps being reached. An output of predetermined data parameter measurements is then generated.